

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

AMENDMENTS TO THE CLAIMS

Claim 1 (Previously Presented): A dry toner for developing electrostatic images, comprising a colorant and a binder resin,

wherein said binder resin comprises a copolymer resin having

(A) a polyol resin moiety having a main chain of polyoxyalkylene and obtained by reaction of

(a) an epoxy resin,

(b) a dihydric phenol, and

(c) an alkylene oxide adduct of a dihydric phenol or a glycidyl ether thereof; and

(B) a polyester resin moiety obtained by reacting an alkylene oxide adduct of a dihydric phenol or a glycidyl ether thereof with a polycarboxylic acid,

wherein the weight ratio of said epoxy resin of said polyol resin moiety to said polyester resin moiety is 95:5 to 60:40,

wherein said epoxy resin of said polyol resin moiety includes at least two bisphenol epoxy resins having different number-average molecular weights, and wherein said binder resin has an acid value of not greater than 5.

Claim 2 (Original): A dry toner as claimed in claim 1, wherein said binder resin has an epoxy value of at least 20,000.

Claim 3 (Original): A dry toner as claimed in claim 1, wherein said binder resin has an acid value of not greater than 1.

Claim 4 (Original): A dry toner as claimed in claim 1, wherein said polycarboxylic acid of said polyester resin moiety is a dicarboxylic acid.

Claim 5 (Previously Presented): A dry toner as claimed in claim 1, wherein said epoxy resin of said polyol resin moiety is a mixture of a lower molecular weight epoxy resin having a number-average molecular weight of 360 to 2,000 and a higher molecular weight epoxy resin having a number-average molecular weight of 3,000 to 10,000.

Claim 6 (Original): A dry toner as claimed in claim 1, wherein said polyester resin moiety has a number-average molecular weight of 500 to 2,000.

Claim 7 (Original): A dry toner as claimed in claim 1, wherein said copolymer resin is obtained by reaction of

- (a) an epoxy resin,
- (b) a dihydric phenol,
- (c) an alkylene oxide adduct of a dihydric phenol or a glycidyl ether thereof,
- (d) a polyester resin obtained by reacting an alkylene oxide adduct of a dihydric phenol or a glycidyl ether thereof with a polycarboxylic acid, and
- (e) a monohydric phenol or a monocarboxylic acid.

Claim 8 (Currently Amended): An electrophotographic color image forming apparatus, comprising:

a photoconductor drum, and

a developing unit, wherein said developing unit comprises a developer bearing member, a developer regulating member, and a toner vessel containing the dry toner according to claim 1.

Claim 9 (Previously Presented): A dry toner as claimed in claim 1, wherein the copolymer resin has a softening point of 100 to 130°C.

Claim 10 (Previously Presented): A dry toner as claimed in claim 1, wherein (a), (b) and (c) are present in an (a):(b):(c) weight ratio of 25-70 : 10-40 : 15-40.

Claim 11 (Previously Presented): A dry toner as claimed in claim 1, wherein the copolymer resin has a Tg of 50 to 70°C.

Claim 12 (Previously Presented): A dry toner as claimed in claim 1, wherein the copolymer resin has a Tg of 55 to 70°C.

Claim 13 (Previously Presented): A dry toner as claimed in claim 1, further comprising a releasing agent having a softening point of 70 to 100°C.

Claim 14 (Previously Presented): A dry toner as claimed in claim 1, further comprising a releasing agent in an amount of 1 to 6% by weight based on the total weight of the toner.

Claim 15 (Previously Presented): A dry toner as claimed in claim 1, wherein the colorant is present in an amount of 0.1 to 50 parts by weight per 100 parts by weight of the binder resin.

Claim 16 (Previously Presented): A dry toner as claimed in claim 1, further comprising a charge controlling agent.

Claim 17 (Previously Presented): A two component developer, comprising the dry toner as claimed in claim 1 and a carrier.

Claim 18 (Previously Presented): A two component developer as claimed in claim 17, wherein the toner is present in an amount of 0.5 to 6.0 parts by weight per 100 parts by weight of the carrier.

Claim 19 (Previously Presented): A two component developer as claimed in claim 17, wherein the carrier is in the form of particles coated with a resin.

SUPPORT FOR THE AMENDMENTS

This Amendment amends the specification and Claim 8. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 8 is found in the specification at least at page 17, line 28 ("photoconductor *drum*"); lines 29-30 ("developer bearing member"); and line 35 ("developer regulating member"). No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 1-19 will be pending in this application. Claim 1 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

Applicants thank the Examiner for the indication that Claims 1-7 and 9-19 are allowed. Final Rejection at Office Action Summary.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as assertedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. To obviate the rejection, claim 8 is amended so that the recited color image forming apparatus comprises a "photoconductor drum" and a developing unit, and the developing unit comprises a "developer bearing member" and a "developer regulating member".

Applicants respectfully submit that the color image forming apparatus of Claim 8, as amended, is not limited to one-component developing units. The specification discloses:

This invention relates to a toner for developing electrostatic images and, more particularly, to a **toner** suitable for use in a ***one-component developing system*** and a ***two-component developing system***. The present invention is also directed to a full **color image forming apparatus** using the **above toner**. Specification at page 1, lines 5-10.

Thus, the specification discloses both a color image forming apparatus with a one-component developing system and a color image forming apparatus with a two-component developing system. Although FIG. 1 illustrates "a one-component developing unit of an image forming apparatus suitable for embodying the present invention" (Specification at page 4, lines 3-6), the specification discloses in Examples 2 and 3 two-component developing units (i.e., the PRETER 550 and the IMAGIO MF2700). The attached Ricoh technical report shows that the PRETER 550 is a two-component developing unit. Thus, the specification shows that the invention of Claim 8 encompasses both one-component developing units and two-component developing units.

Because the specification as originally filed fully supports Claim 8, as amended, the rejection under 35 U.S.C. 112, first paragraph, should be withdrawn.

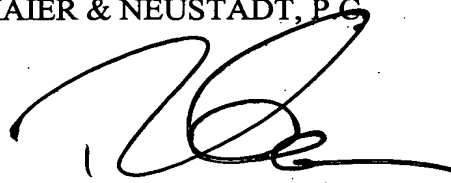
The disclosure is objected to. To obviate the objection, the specification is amended to capitalize the trademarks.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

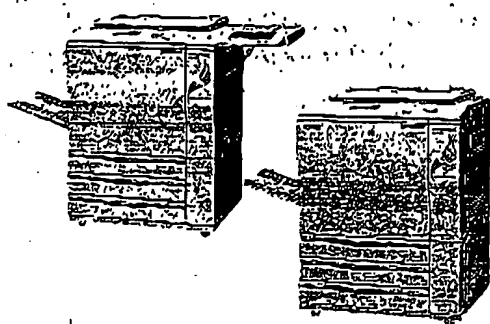


Richard L. Treanor
Attorney of Record
Registration No. 36,379

Attachment: Ricoh technical report

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 08/03)



高画質・多機能デジタルフルカラー複写機 PRETER550/500

Multi function digital full color PPC with superior image quality

水摩 健一* 河石 康則*
Kenichi MIZUMA Yasunori KAWAISHI
福島 潔*
Kiyoshi FUKUSHIMA

要 旨

PRETER550/500は、幅広いニーズに対応できる高画質・多機能デジタルフルカラー複写機で、次のような特徴を有している。

- 1) 新規中間転写システムの採用による幅広い紙種対応力
- 2) 世界初液晶ディスプレイエディターによる高精度編集加工

ABSTRACT

PRETER 550/500 is a multi function digital full color PPC with superior image quality, corresponding to a wide range of color needs. The main characteristics are as follows;

- 1) A new transfer belt system for several kinds of paper.
- 2) Highly accurate editing capability with the first LCD display editor in the world.

1. 背景と目的

デジタル化により高画質及びシステム化を含めた多機能化が可能となり、また急激なPCの普及、カラー化によるカラー原稿の増加などオフィス環境の変化などにより、フルカラー複写機の市場拡大が大きく期待されている。'93に発売されたPRETER550/500は、デザイン・広告・宣伝企画など原稿を創造する専門オフィスを中心に（PRETER550：高編集機能搭載のクリエイティブマシン）、一部白黒機代替可能な一般オフィスも対象として（PRETER500：単機能・省スペースのベーシックマシン）、企画・開発された高画質・普及型デジタルフルカラー複写機である。

2. 製品概要

PRETER550/500の基本構成概略をFig. 1に、主な仕様をTable 1に示す。

尚、550と500の違いは、ディスプレイエディタの有無と編集加工機能の差であり他の基本構成は共通である。

3. 技術的特徴

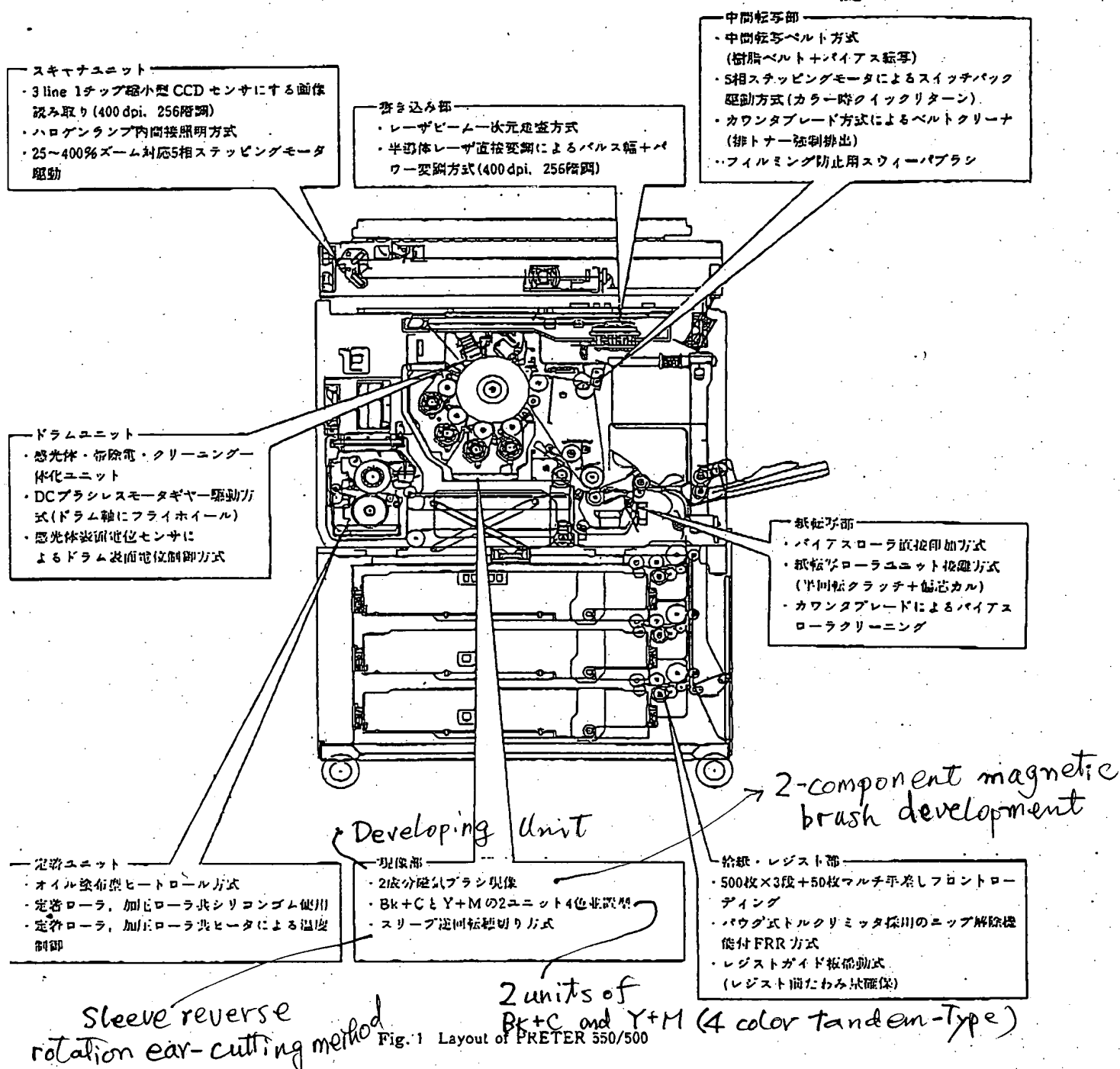
フルカラー複写機において画質及びその安定性は最も重要な要求項目の1つであるが、本機では、400dpi/256階調の読取・書き込み・画像処理及び6.4 μ m小粒径トナーの採用、又ファジー制御によるプロセスコントロール等によりそれらの課題を達成した。

本稿ではPRETER550/500に採用されている製品技術のうち、最大の特徴である①中間転写システム②液晶ディスプレイエディタについてその概要を説明する。

3-1 中間転写システム

本機では、従来一般的に採用されていた転写ドラム方

* FCP事業部 PM室
Products Planning & Management Department, FCP Business Division



式に代えて、リコー独自の中間転写、S T システム (Synchronized Transfer) を採用した。中抵抗転写ベルト・バイアスローラ転写手段を採用することにより、幅広い紙種対応性・先端画像欠け幅低減・オゾン発生的大幅低減などが実現できた。

3-1-1 ベルト転写機構 (Fig. 2)

転写ベルトを感光体に当接し、フォワード (時計回り) 方向に回転させて、1 色目の画像を転写ベルト上に転写させる。1 色目の転写終了後、転写ベルトを感光体から

離し、フォワード回転した分だけ転写ベルトを高速リターンさせて転写位置を合わせる。この作業を 4 回繰り返すことで、転写ベルト上にフルカラー画像が形成される。

尚、単色コピーの場合はスイッチバックを行わずフォワード方向のみに回転させている。

3-1-2 紙転写機構 (Fig. 3)

転写ベルト上のトナー像は、給送される用紙に合わせ上昇加圧される紙転写バイアスローラにより、トナー極

Developing
method

MF2700のトップページに

imagic MF2700
MF2700 Model 6/5/65

Dry 2-component magnetic
brush developing method

基本仕様/コピー機能

形式		デスクトップ
原稿台方式		固定
感光体種類		OPC
複写方式		乾式静電転写方式
現像方式		乾式2成分磁気ブラシ現像方式
定着方式		ヒートロール方式
複写原稿		シート・ブック・立体物(最大A3、DLT)
複写サイズ		A3,A4,A5タテ,B4,B5,ハガキ*,レター、リーガル、ダブルレター 画像欠け幅:先端3±2mm、後端2±2mm、左側2±1.5mm、右側2+2.5mm・2-1.5mm
解像度		400dpi
ウォームアップタイム		85秒以下(20℃)
ファーストコピータイム		3.9秒以下(第1トレイ)
連続複写速度(毎分)		27枚/A4ヨコ、31枚/B5ヨコ、15枚/A3、17枚/B4
複写倍率	標準	1:1±1%,1.15,1.22,1.41,2.00,4.00,0.93,0.87,0.82,0.71,0.61,0.5,0.25
	ズーム	25～400%(1%単位の任意設定)
給紙方式	本体トレイ	550枚×2
	給紙テーブル*	550枚×2
	手差しトレイ*	50枚
連続複写		1～999枚
電源		100V, 15A, 50/60Hz
最大消費電力		1.5kW以下
大きさ(幅×奥×高)		MF2700、MF2700モデル5:600×640×720mm(コンタクトガラスまで) MF2700モデル6、MF2700モデル65:600×640×870mm(ADF標準)
機械占有寸法		600×640mm
質量		MF2700:67kg、MF2700モデル6:90kg、 MF2700モデル5:80kg、MF2700モデル65:92kg

* 給紙テーブル・両面ユニット・手差しトレイはオプションで他は標準装備。

プリンター機能

解像度	600/400dpi
スムージング機能	2400dpi相当(データ解像度600dpi時) 1600dpi相当(データ解像度400dpi時) ※RPDL IV、RP-GL/2、RICOH-SCRIPT2モード印刷時